Dark Matter as Signature of Supermassive Anti de Sitter Spaces

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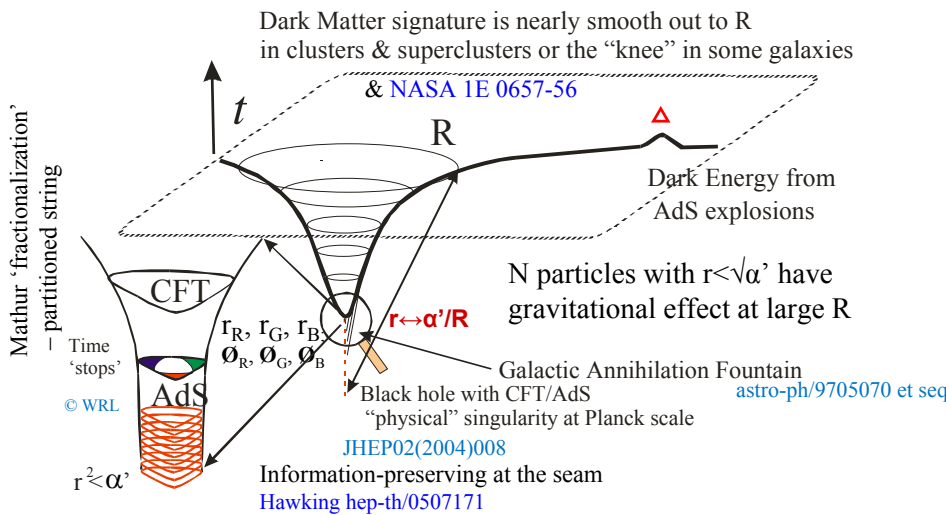-revises the Architecture of a Comprehensive Theory presented at Cosmo 02

Author references: physics/9712042 astro-ph/0007100 hep-th/0205176

1. Recent observations of galaxy substructure in clusters
   - Smooth mass distribution
   - Chandra – matter not interacting with DM

2. Anti de Sitter space as an information-preserving physical singularity
   - Conformally attached to black hole singularity
   - Mass which can explain dark matter at large apparent D
   - Annihilates with normal matter as it recedes from the present

   Dark Energy and Cosmology
   - AdS white holes - temporally advanced remnants of the Big bang
   - Varying dark matter and energy in cyclic cosmology

Gravitational lensing in the observable/temporal plane

Dark Matter signature is nearly smooth out to R
in clusters & superclusters or the "knee" in some galaxies

& NASA 1E 0657-56

t

R

Dark Energy from
AdS explosions

Mathur 'fractionalization' – partitioned string

N particles with r<√α' have
gravitational effect at large R

CFT

r_R, r_G, r_B
$Ø_R, Ø_G, Ø_B$

$r↔α'/R$

Galactic Annihilation Fountain

Time 'stops'

© WRL

AdS

Black hole with CFT/AdS
"physical" singularity at Planck scale

astro-ph/9705070 et seq

JHEP02(2004)008

$r^2<α'$

Information-preserving at the seam
Hawking hep-th/0507171

Mass is determined by the cross-sectional area of the 1-brane world sheet, a
function of both α' and ç, with *scalar* λ= ∃(r_R,r_G,r_B, cosØ$_R$, cosØ$_G$, cosØ$_B$)

$$T_n=\ln(T/T_o)/42$$

(x,y,z) curled up   Both axes use Randall-Sundrum scaling

$α'/R ← R$

Current epoch of mini-inflation astro-ph/9812133
Dark Energy proposed to be Big-bang residuals;
'white holes' observed as supernovae and/or burstars

T_o=100 Myr

(r_R,r_G,r_B) curled up

Matter dominated

©'96

$M_{p,n}$

Cyclic cosmology has 9-D space plus 2-D "imaginary time"
-Necessary to write boundary conditions for cosmology

Mass- present, normalized

··· ln[(M_{univ}- M_{bh})/M_n] : Dark Matter, see astro-ph/0206264

- - - ln[(M_{univ}-M_{wh})/M_n] : Dark Energy

Primordeal Black Holes

Planck scale →

Guth's inflationary Big-bang cosmology

M_n

Dark Matter Ring in Galaxy Cluster Cl 0024+17 (ZwCl 0024+1652)
Hubble Space Telescope • ACS/WFC
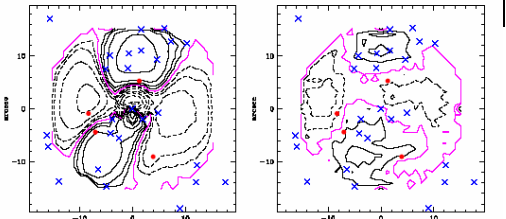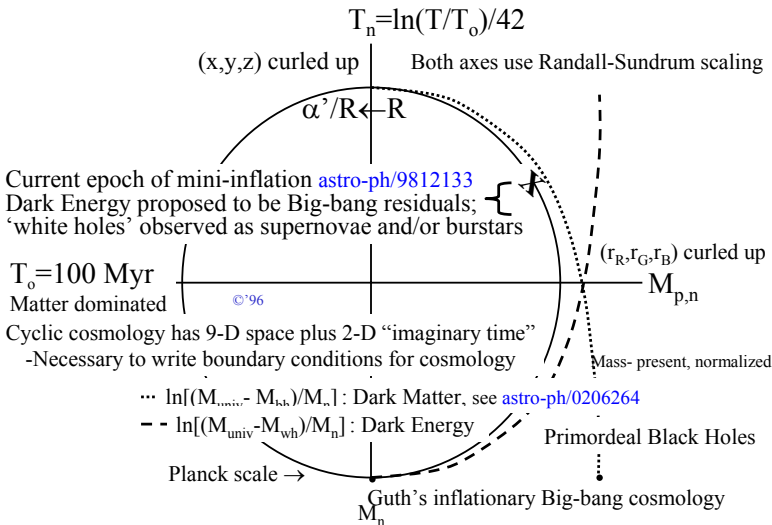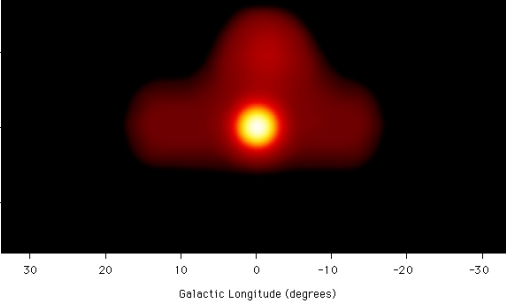NASA, ESA, and M.J. Jee (Johns Hopkins University)   STScI-PRC07-17a

Figure 1: Residual mass maps obtained by subtracting the circularly averaged mass distribution from *Pixe-Lens* ensemble average maps. The solid black contours indicate positive surface mass density residuals, and

Caption: Latest model for the distribution of positrons towards the center of the Milky Way Galaxy,
including the newly discovered antimatter "cloud". The brightest feature corresponds
to the nucleus of the Galaxy. The horizontal structure lies along the plane of the Galaxy.
The antimatter "cloud" is located above the Galactic center.

Courtesy of D. D. Dixon (University of California, Riverside) and W. R. Purcell (Northwestern University)

$$e^{(i\theta_{mt}-\lambda)}|Я\rangle \rightarrow \text{General Relativity}$$

The sum of the mass & energy of all particles is **finite**, set it equal to 1

$$\sum_U e^{(i\theta_{mt}-\lambda)}|Я\rangle=1=(\cos\theta_{mt}+i\sin\theta_{mt})e^{-\lambda}, \theta_{mt} \text{ variable}$$

By gravitational holography, quantum particle states
don't cause the sum to diverge: PRL 89(8)/081301

regroup and re-identify: $= \dfrac{G^C_{\mu\nu}}{\Lambda g_{\mu\nu}} + \dfrac{\boldsymbol{i}\,8\pi}{\Lambda g_{\mu\nu}}T_{\mu\nu}=1$

Here Я represents a non-commutative matrix algebra which
both replicates QC/ED and meets Seiberg's causality criteria:

"..**if** the time coordinate is involved in the non-commutativity the theory
seems to be seriously acausal and inconsistent with conventional
Hamiltonian evolution." N. Seiberg, L. Susskind & N. Toumbas, J High-E
Phys, June 2000 JHEP06(2000)044.